

Amendments to the Specification:

Please amend the paragraph at page 34, lines 9-25 as follows:

The spot 60, where the DNA probe 61 bonded with the complementary sample DNA segment by hybridization exists, receives phosphor exciting light that is irradiated by the fluorescent substance from the light irradiation means 71 to emit visible light with a longer wavelength. Accordingly, the semiconductor layer 23 in the sensor 20 directly underneath the spot 60 is excited by the visible light to produce a number of electron-hole pairs. During the charge storage period of the i-th line following to the reset period, the top gate driver 11 (means for applying a negative voltage to each of the top gate electrodes) impresses a negative charge storage voltage to the top gate line 44 of the i-th line, and only the holes of positive charges are trapped by the semiconductor layer 23 and the channel protective film 24 thanks to negative electric field impressed to the top gate electrode 30, and the electrons are caused to repel against the electric field and result in discharging out of the sensor 20.